EMSP
Environmental Management Science Program

FACTS ON FILE

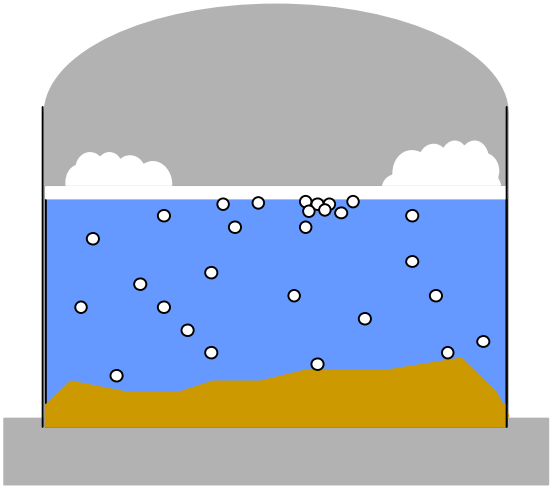
Mechanics of Bubbles in Sludges and Slurries

Problem Area: High Level Waste
Scientific Category/Subcategory: Engineering Science/Bubble Mechanics and Sonification

Description: Researchers at Pacific Northwest and Lawrence Berkeley National Laboratories and the University of Texas are studying the interaction between bubbles and the rheologically complex waste slurries and sludges in high-level waste tanks. These bubbles/foams and their associated volume vary in response to a number of factors including barometric pressure changes, and these volume changes can be analyzed to estimate retained gas within the wastes. The gas presents a flammability/explosion hazard within the tanks. This project is closely related to Project 60143 *Foaming in Radioactive Waste Treatment and Immobilization Processes.*

Application: The information and techniques developed from this project will be applicable to the Tanks Focus Area. The project has near-term applicability to waste processing at Richland, Savannah River, and Idaho. It impacts the Hanford tank safety analyses and the High Level Waste Pretreatment project at Idaho.

Value/Benefits: Improved measurement capability and understanding of the retained gas in the tanks will enable more realistic safety and risk assessment to be performed on the individual tanks. It will also provide more accurate models for estimating waste properties from level/pressure data and should quantify the effect of barometric pressure fluctuations on the slow release of bubbles versus time.



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Project Duration:
1997-2000
Web Information Sources:
http://www.doe.gov/html/em52/60451.html

The Environmental Management Science Program (EMSP) is funding basic research projects focused on solving the most difficult problems that threaten the closure plans of DOE sites. Further program information can be found at this web site: *http://emsp.em.doe.gov*